TRIED DAY-MORNING ARRESTON. CLEVELAND, O., Saturday, July 31, 1879.

CLEVELAND, O., Saturday, July 30, 1830.

The Association convened at 9 o'clock. The names of several distinguished individuals were proposed for membership—they were duly considered and received. The Standing Committee recommended Manday afternoon next, for a general meeting of the Association for the purpose of electing a President and other officers for the following year, and, also, to determine upon a place for holding the next meeting. Invitations were re-proof from Washington, Buffalo, Providence and Nantacket.

The Association then adjourned to meet in sections at the Third-st School House, after which the reading of believe commenced

Prof. Casswell, Chairman, and Prof. W. CHANGESET.

The Chairman called for the paper on the Earthquake

The Chairman called for the paper on the Farthquake
Aper 20, 1802; by Lexis Richard, of Washington
City. The following is a copy of the paper:
Easthquakes are so slight and rare in the United States,
that very little after from his hitherte been given to to their
special pseularities or their reference to the internal forces
of which they are the effect. The condition of this partica
of the globe in respect to permanent quiescence, would
have light thrown upon it by a careful analysis of its earth
make movements, and analogies might be traced with
what poetices which would decode whether our continent
was singular in this respect, or whether there was any uni-

no volcanie vents occur in an immense area of which Alleganies of Apalachian of mountains the center, we see the problems of general quiescence more distinctly ore us in considering earthquake movements here, than districts where active volcanoes and in accuracy with the surface. Some movement of the ex-ral crust must re-cessarily attend violent action of these rea for the causes we may readily see their necessary rea for the causes we may readily see their necessary

ction. the fact of the occurrence of earthquakes in an area the fact of the occurrence of earthquakes in an area this we occupy establishes the assence of internal ore, and a state of inquisocence immensiy distan from pend of external communication. It will be of the best interest then to a certain whether it is a contractile spansive movement, or neither, and of mere oscillation, trace is movement to a focus of satisation, if such ex-cet to refer them to some general and uniform solon of interior, not limited to any particular area or particular

re are few or no instances of strictly volcanic action There are few or no instances of strictly volcanic action in all this area. A few emption masses have been found in North Carolina and Massachusetts, which may be subsequent to the trappean intrusions, but with that exception, of it is such, no evidence of the action of internal forces of the such, no evidence of the action produced the mountains themselves, and the various trappean rocks which protunded through the plain of their eastern slope. Are protunded through the plain of their eastern slope, are have no easiet no changes have occurred since which have not been as far as we may judge, gradual or progressive through a series of movements, sep rately unimport and. We show such changes to have occurred, and have be knowledge of others.

Is this description of changes yet continued, and have authorized any connection with it?

Is this description of canaly, arthogases any connection with it? These questions are probably too remote to be reached. These questions are probably too remote to be reached by any bimited examination, either in number of earthly any lambda over which they extend yet they really unquakes or area over which they extend yet they really unquakes or area over which they extend yet they really unquakes or area over which they extend yet they really unquakes or area over the probable of them. rie all variable examination of them, and must be kept view, in combining the notes we have of those which sobserved.

In the earthquake of April 29, 1852, there was an aposm view in combining the locks we observed.

In the earthquake of April 19, 1850, there was an apparent gradation in the effect, which might, perhaps, he rest gradation in the effect, which might, perhaps, he restered to some central point of maximum forces and a ferrest via the character and direction of the impulse also, which it fully observed, should have coincided with the indications it gave of the focus of agrication, if the observations it gave of the focus of agrication, if the observations originated at any focal point. If not referrable to a focus of forces and not, therefore, to be regarded as a transmitted impulse, there might be great diversity in both these conditions, and that diversity due to slight general subsidence or elevation of a surface of primitive rock, drift, alluvion, or whatever might modify the external transmission of an internal force. Time, also, if it could have been correctly noted, would have defined the initial point of the phenomena with precision, and the character and direction of the transmission of the force or impulse.

The observations of this cartiquake which have been obtained, though probably more full than in any previous case in this country, are still so meagre as merely to outline any answer to these questions. Some few deductions will be readily made from them, or rather some general points may be regarded as sufficiently established in this case.

First, that the disturbance was an undulation, propared from South West to North East with a district of maximum effect in southern Virginia, and a line of maximum effect in southern Virginia, and a line of maximum effect strending along the mountains, North-eastward nearly to althany N. Y.

Second. That an undulatory movement, at right angles to the first, was propagated laterally from this line, and in some cases blended with the other, and no notions are clearly established which were not of one or the other. Thire, The whole agitation is distinctly bounded by on-

The whole agitation is distinctly bounded by ob-

Thire. The whole sgitation is distinctly bounded by observations, and must have been confined entirely to the district represented on the chart.

The phen mens might be compared to the effect of a ball relief rapidly under sheets of paper, causing a wave of movement first, and greatest along its direct line, and less marked lateral waves, in part blended with the first, and at right angles to them. This may seem inconsistent with the laws of motion, but if the undustation was propagated rapidly along its central line, the peculiar toronation of the mountains, and the uniformity of the position of the rocks, so uniformly upturned at right angles to this line, would tend strongly to shape the true lateral movement, without confounding them in a curve. anding them in a curve. unding them in a curve,
precise time of its occurrence at any place is very
sit to obtain. At a few places, it is relied upon so
as to place the time given, beneath the name of the
corrected for difference of longitude, to make it com-

place, corrected for difference of longitude, to make it com-parable with the time at Washington, and thus to show the absolute difference of time between the occurrence of the phenomenon at each place, and at Washington. It is ovi-dent at a glance, that it occurred much earlier in Southern Virginia than northward. A more direct and pre-cise comparison may be made with Richmond. Several careful observers give separately the same time, and after correction, there are more than eleven minutes difference. case of observers give separately the same time, and after correction, there are more than eleven minutes difference.

At L wisburg, in Virginia, there are twenty dive minutes difference, and the comparison of distances with the former place, seems conclusive that the undulation was propagated from a point farther southward, yet not beyond the mountains, in a north-easterly direction, with a nearly uniform ratio of 650 miles per hour, or something less than the velocity of sound.

In corroboration of this position, several observers perceived the sound slightly at first, and heard it always in the south west. In some instances, the sound only was perceived. The earth, therefore, though the sounding body, and creating the sound by its agitation, sent it in advance, and in some instances, further than the agitation was extended.

general direction in which the earlier disturbing The general direction in which the earner disturbing cross of the earth's crust have acted on this portion of the continent is clearly shown in its mountains. The identity of movement exhibited by the most considerable earth-quakes, with that of the forces necessary to cause the immense uplifts of the mountain ranges, croves an identity of forces; and that interior disturbances, as deep as the molten matter of the earth, are the direct cause of such each term of the carth, are the direct cause of such each product of the carth, are the direct cause of such each product of the carth, are the direct cause of such each product of the carth, are the direct cause of such each product of the carth, and the direct cause of such each product of the carth, and the carth, are the direct cause of such each product of the carth, and the carth, are the direct cause of such each product of the carth, and the carth, are the direct cause of such each product of the carth, and the carthesis of ten matter of the earth, are incontracted forces reacted to the contract the forces reacted by, or to essual oscillations of the matter of the interior, is scarcely necessary here to inquire. We are more desirous to ascertain whether it has identity with the earther disturbing forces of the earth, and may be regarded as their continuation, or whether it is the effect of decomposition or

tinuation, or whether it is the effect of decomposition or change in superficial masses.

The general direction of all the more considerable early quake movements, is clearly along the line of these unlifted ranges, or a tright angles to them; all are from N. W. to S. E., or from S. W. to N. E., or the reverse of these, though along the line of the mountains the movement is quite uniformly from S. W. as if the proximity of the disturbing force to the surface was greater there, or a readier contacted.

Flint's account of the earthquakes of the Mississippi, ia Fint's account of the erthquakes of the ansassappe, in 1811 and 1812, which is the best published, shows clearly that the motion was generally from S. W. to N. E. Chassus were opened in that direction by cross of undustory movements, which seemed to accumulate force until a vent was in this way formed. "Waves, increasing in elevation "as they advanced, and when they had attained a fearful

was in this way formed. "Waves, increasing in elevation as they advanced, and when they had attained a fearful "hight the earth would burst."

Bringier say that this earthquake, having disturbed the earthy and woody deposits in the first instance, its subsequent violence was due to this disruption, and to causes more merely local than the first,—to the gases and rapors emitted, by masses of half carbonized wood, and by displaced waters. All the subsequent phenomena of subsidence and elevation, and of emission, sand and water, may have been due to these causes, and were therefore, not immediately referable to interior forces. The peculiar character of the formation, the masses of vegetable and alluvial matter, and the general softness and mobility of the whole on its beds of quickand, greatly added the effect. In volume 39 of Nilliman's Jone and, a locality of earth quake disturbance is described in Connecticut, which has been more or less active for more than a century. All the principal shocks seem to have been either from N. W. to S. E., or from S. W. to N. E. Though the formation is here primitive with trap dikes of great extent, the forces seem to be quite local in their character, and not referable to a deep internal signify.

No reliable notices of the first shocks of earthquakes in the Mississippi in 1811 are to be found. There are evi-

No reliable notices of the first shocks of earthquakes in the Mississippi in 1811 are to be found. There are evidently two classes of earthquakes in this country, one a true ciaruption of the crust of the earth, and the other a consequent of the first, extending, perhaps, over a considerable period of time and sue to the chemical cuarges of effected in the disturbed matter. The probability of this solution of many of our sarthquakes is very strong. Those of a local character seem to have periods of violence, or to begin with considerable violence, and gradually exhaust themselves. The Newburyport earthquakes, from 1727 to 1755, are a marked instance.

No regular lines of movement are apparent in most carthquakes of this character. In some instances, if not

in most, the disturbance is not deep enough to cause such

in most, the disturbance is not deep enough to cause such movements.

A very careful account of an earthquake in New England in 1785, (18th Nov. at 4] A M.) gives the character of the movement very clearly.

It was an undulation, propagated from N. W. to S. E. and the procress was slower than that of sound, as was proved by the sound being heard full two minutes before the earthquake was felt. A great retrest of the sea from the harbor of St. Martins, W. L. occurred 2] hours after, which was probably connected with the movement.

The earthquake of October 29, 1727, also came from the N. W.; that of June 2 letts from the northward. Of others in 1805 and 1862, the course is unknown.

That of 1525 was thought to be central in New-Hamp shire, extending to the Chesspeake southward, and to Halfax northward. The motion was undulatory, breaking chimnies, sharts &c., and openings were found in some places, as Pembroke Scituate, through which water and send were thrown up.

nd were thrown up.
One earthquake only is recorded from 1741 to 1755, which

One earthquake only is recorded from 1741 to 1755, which was in June 30, 1744. A very careful comparison of the weather is made by Mr. Wunthrop through most of the above periods, which, he infers, shows no connection of the earthquakes with service weather, as it so generally surposed, nor with atmospheric phenomenon of any kind. Anotter indication that the senth-west part of Virginia was the central point of the earthquake under consideration, is found in the occurrence of a second shock, an hour or more after the first. A second earthquakes, in fact. The analogy of all earthquakes shows this repertion of the phenomenon to attend all great earthquakes, and to be in number and severity proportionate to the character of the first. Such a repetition, therefore, at one place out of many observed, would mark the maximum point of the first by the clearest analogy, and in this case one or two stations in S. W. Vugima are the only instances of observance of a second earthquake. second earthquake.

Prof. J. S. Riddle, Chairman, Prof. H. L. Sairin,

Secretary.
The first paper was on the Origin, Development and In

The first paper was on the Origin, Development and Intimate attracture of the Renal Origins throughout Vertebrata, by Dr. W. I. Burkett Boston.

The following is a very short abstract:
There are two facts strikingly significant of the importance of the urinary organs in all the higher conditions of animal lite. These are: their widely distributed presence, and second their early appearance in developing embryone forms. I might perhaps, add as a third fact that their innetional activity is in an exact ratio with the grade of organizations. Throughout the higher classes of the invertebrata, and in all the vertebrata, their organic and fanctional relations stand out quete prominent—and it is only in the lever classes of the animal kingdom, possessing no blood circulation that they are sheen.

We found that to the Physiologist, is a beautiful and suggestive last met with not unfrequently in Embryonic Studies. Nature sometimes puts up temporary provisional structure—to perform an important function until the condribute of the organization shall be such, that a permanent

peture—to perform an important function until the con-ors of the organization shall be such, that a permanent organ can be formed of a certain type belonging to the animal as each, and lasting its entire life—such a fact is that of Wolffan bodies.

In the higher forms of organization, the blood seems to

In the higher forms of organization, the blood seems to require, immediately upon its active circulation, some means of purification—and to effect this, a delicate, tran sient structure is crected to remain only until a more solid one, it the shape of a true kidney, can be formed. These temporary kidneys are found in all vertebrata, excepting the Fishes and Amphibia—that is in the true Resultes, Rirds and Manimuls—and the length of time they persist as active organs in the embryo, is in an inverse ratio to the grade of the Animal. In fact, this law of gradation seems so marked that in amphibia and dishes passessing only permanent venist organs, there would seem some ground for the opinion that these are only permanent. Walfian bodies, The True Kidneys.—These organs, being permanent, and appearantly indispensable in the adult economy of all

and apparently indepensable in the adult economy of all the vertbrata have a physiological importance much greater than their temporary analogies. the vertebrata have a physiological importance much greater than their temporary analogies.

I need not here go into the details of their comparative anatomy, and those variations of external form belonging to each type. It is hister place, the local or formula of the kidney wherever met within the vertebrata is always the same. This is a would be expected, for the function being the same—the functional structure ought always to be after the same incled. Thus finding the intimate structure especially, the same. Everywhere, we should naturally infer a single and invariable mode of development, such in fact I have found to be true.

single and invertable mode or development, such in fact. I have four of to be true.

In Fishes and the Amphibeous reptiles, the earlier phases of development seem to be a little less complicated in in the higher classes. In fact, here the type of structural de-velopment is quite allied to that of the Wolffian bodies, and ty some anatosists, the kidneys of fishes have been re-garded only as permanent forms of the above mentioned organs. This, however, is not true, and the similarity is analogical in tend of homelogical, being one of those many instances not with in the instance of development, where a nament organ of a lower forest adows in general outline instent one, in a higher class.

Papers and Abstracts of Papers Read on Previous Days. Our reporters send us several abstracts and copies of

Papers from which we select the following: TUBULAN BRIDGES.

On the Resistance of the Vertical Plates of Tubular Bridges By Hirman Hadder. Superintendent of the Pennsylvania Central Railrond.

The prest desideratum in the construction of Bridges, is an arrangement of parts that with a given weight of material, will possess the most efficient power of resistance. An arch fulfills the condition of maximum resistance with a given weight of material when the distribution of the had is constant. With a permanent weight, whether not formly distributed or not there is a curve of equilibrium.

lead is constant. With a permanent weight, whether and formly distributed or not, there is a curve of equilibrium, and a given amount of weight of material arranged to conform to this curve, will give the maximum of resistance which the material is capable of opposing.

But for ordinary Bridges, especially for railroad purposes, there can be no curve of equilibrium, the load is not only variable but very great in proportion to the weight of the structure, and were an equilibrium possible in one position, it could remain stante only for an instant, as the transit of the load to another position would at once disturb, it

are will never pess outside the arch, or it must be com-med with a resisting truss, capable of opposing any ten-ency to change of figure

ency to change of figure.

Most of the bridges in general use are illustrations of this Most of the bridges in general use are illustrations of this sectes of combination, but the main reliance is usually faced upon the trues, the arch being used merely as an explisity. Where wood is used, this more ase of material is of objectionable except as far as il increases, unnecessary, the weight of the structure, but where iron is employed becomes essentially important that the distribution of the orces should be understood the strains upon all parts of estructure accurately determined and the dimensions

the structure accurately determined and the dimensions correctly proportioned to the required resistance.

The principles involved in these calculations have already been given to the public, in a work on the general Theory of Bridge Construction, and no further reference to them is required, except to state that an application of these principles would lead to a radical change in the manner of constructing bridges trusses, and instead of using an arch as an auxiliary to a truss, the arch would be made the chief dependence, and the truss employed to resist the action of variable loads and prevent obtaines of figure in the arch during their passage over the bridge, when dispose an efficient resistance to vibration, flexure, or fracture.

In tubular iron bridges, which have recently attracted In tubular iron bridges, which have recently attracted of the historica, no difficulty is found in determining the strain upon the horizontal tables, and in proportioning them of rectly, but the dimensions of the vertical ribs and the best manner of stiffening them will depend not only upon the magnitude of the weight but upon the mode of application. If the weight be supposed applied at the models of a tubular bridge, its action would tend to short on the disgonal extending from the middle of the top corder table to the end of the bottom table, and at the same table cannot be convented to grown in four tide of or table to the end of the bottom table, and at the same time to energist the opposite diagonal from the middle of the bottom table to the end of the top table, as the strain upon the last diagonal would be nearly as the strain upon the last diagonal would be nearly as the strength of the material, but the opposite disgonal, being subject to compression forces, would if it formed a line of a timp late of m-tal, be unable to oppose any efficient resistance, and the bridge would probably fail in the cirection of this ciagonal. It becomes necessary, therefore, to provide means for stiffening the ribs, and this is usually effected by its ting to them, vertically, pieces of T from at short intervals. By these additions, the distribution of the strains is changed, and the a tion of the parts is similar to that of a trus on the Prat plan, the vertical stiffness taking the place of the posts, and the lines of sheet from connecting the opposite angles of any panel having a corresponding action to the ordinary diagonal rods.

The resistance which such an atrangement is capable of

The resistance which such an arrangement is capable of opposing, it is proposed to determine from the following

opposing, it is proposed to determine from the rollowing considerations:

In the general theory of bridge construction it has been communicated that when the lead is uniformly distributed, the vertical strain increases uniformly from the mindle to the ends—the strain upon the disgonal of say panel, will be as the length of the diagonal to the length of the vertical side—and, clso, as its distance from the module of the trustic maximum vertical strain being, of course equal to the white weight of the bridge, and its load, with the momentum due to motion and vibration upon the structure, is not raid.

rgie.
It has also been shown that the vertical and diagonal It has also been shown that the vertical and diagonal strains upon any panel, which are always preportioned to each other in a fixed ratio, are also in proportion to the degree of angular motion or change of dgure in any panel caused by fixure, and as the set lement of a bridge to the figure of an inverted are would not change the rectangular shape of the middle panel, the vertical and diagonal strain upon this panel would be theoretically, nothing, while at the end of the truss, the variation from a rectangle and the intensity of the vertical and diagonal strains, would be greatest.

Knowing the whole weight of the structure the strain upon any panel is readily determined, and it is now are

ponenty panel is readily determined, and it is now pro-ored to n quire what will be the resistance of a sheet of netal, secured to all the sides of a rectangle, in comparison

not, perhaps, be interesting to most newspaper readers, as it

THE LATE HAIL STORM.

not, perhaps, be interesting to most newspaper readers, as it is very abstruse and somewhat lengthy:

**Natice of the Haul Storm scheck peaced over New York on the last of July, 1833. By Prof Lookins.

On the last of July, 1833, a very remarkable Hall Storm passed over the city of New York. The day had been un commonly hot and sultry, the thermometer having risen to 80 degrees, and the air was believed to contain an unusual smoon, a bravely, black cloud was observed to rise in the rooth west, the wind, at the time, blo wing moderately from the north east, and subsequently from the seat.

As the cloud subsequently from the seat.

As the cloud subsequently from the seat.

As the cloud subsequently from the seat, and subsequently from the seat.

As the cloud subsequently from the seat of the seat

The rain necomparied by thunder and lightning con-inued for six or eight hours, when its violence somewhat shaled, it returned again with renewed energy, but soon afterward entirely caseed. Another, but more moderate, shower followed half an hour later, yet with at either half or helithing. Throughout the entire storm the wind had or hightning. Throughout the entire storm the wind had blown with reasiderable force, but not with destructive vielence in that part of the city which is south west of the University, and in the lower part of the city there was lit-

the rain.

In the upper part of the city, however, in the neighborhood of the frystal Palace, the wind bles with destructive violence. A high brick wall was blown first to the ground: a block of four wie den buildings in it entirely completed, was prestrated, into a wing of the Crystal Palace was blown down. The full of hall was heavy, and considerable gives in the Crystal Palace, and in the buildings in its vicinity was broken.

in the Crystal Palace, and in the buildings in its vicinity was broken.

Buring the first part of the storm, the lightning was unnexally severe. Several buildings and trees in New York and Windows burgh were struck by the electric haid, and one of the trace which the ground of the trace which the ground of the trace which is storm for a distance of followed the trace per burst of the distance of followed the trace per burst of the distance of followed the trace per burst of presenting a ray perfectly overcast. I find an occurs on the second day after in the bent the several small control. The portion of the trace which I have myself surveyed, commences about a mile and a had southwest of Palecson, N. J., from which point it proceeds in a south-east fire-tron, passing over the village of Acquack-banck, together with the cities of New York and Williamsburgh, and from this point the storm can be traced with diminished energy to Janates. Bay, New Peterson the wind is be theven to have seen more violent than in any other part of the above mentioned track. Where it were the mile traces were overturned, while other were enapped off and twisted this reeds. This remark applies to a distance of about three or four miles from the average double and twisted this reeds. This remark applies to a distance of about three or four miles from the commence ment near Paters in. In the neighbor hood of Acquack-banck, the freek is one cross of the lightness and the violence, septically in the violence, expectably in the work of the discussing the act is large number. East of Acquack-banck, the freek is mile manner to be a structure of the sum of the commence of the commenc

the wind was a satisfactory and the rand less distinctly defined.

The storm in its passage from Paterson to Williamsburgh, destroyed nearly all the unbarvested grain, cherries, peacher, applies etc. within the limits of the track. Here we are obliged to omit many interesting details

for want of space.)

From a comparison of all the facts, I conclude that the wind in this storm blew first from the north east and that this current was succeeded by a north and promptly by a north west wind. We find that our large tree was prostrated, with its top towards a point 8.70 deg. W. upon it lay another large tree with its top S. 50 deg. S. We infer that these directions correspond nearly with the directions of the wind when the tree were reasonable and that the wind these directions correspond nearly with the directions of the wind when the frees were prostrated, and that the wind came from a point N 10 deg. E., and was succeeded by a current from N 60 deg. W. In other cases of interfering frees the angle of crossing was so small as to convey no very distinct information upon this question. An intelli-gent farmer whose house was close upon the north-east margin, of the track about four miles from Paterson, gave the following testimony. He first took refage from the hall ancor a sled, on the south west side of his carn. The wind the bloowing from the north-east, after a short time hall under a slied, on the south west side of his darn. The wind then blowing from the north east, after a short time the hall began to beat upon him, the wind having veried to the north west, and he was obliged to seek shelter on the south- ast ride of his barn, in order to escape the hall. It is able known from the t-stimony of several individuals that the wind in New York was easierly upon the first approach of the storm. Upon comparing three facts, it appears to me that the direction of the wind at the time of its results to yok pee was from the north ast on the rout of

proach of the storm. Point conjugators described in pears to me that the direction of the wind at the time of its greatest violence, was from the north east on the robit of the storm and from the north west on the rear, the whole having a prigressive motion feward the south east.

What was the Counse of the Hour!—The hall was caused by a violent upward movement of the arc, carrying along with it an unusual angust of vapor, which was stolerally condensed, and at so low a temperature that it was frozen in large, semi crystaline masses. That there was violent upward movement of the air appears from the fodowing considerations: Rev. G. W. McLane, of Williamsburgh, was in the street rear his bouse, and noticed the coming up of the storm. He says the cloud was very dense and back—moved rapicly forward, and under the main sheet, the clouds boiled up in a violent and angry manner. Others have testified to substantially the same feets. Again, it appears impossible that two currents in close laying sation should blow from nearly opposite quarters with such violence as to prostrate large trees, unless there is opportunity for the air to escape upward.

Into was the coul which forward the hair produced?—The transparture of hallstones whom they fail is sometime as

is opportunity for the sir to escape upward.

Anne was the coal which present the haid produced?—The
tem perstates of hallstones when they fall it sometimes as
in a send or even runding. Fahrenhelt. The temperature of
the air climingles as we ascend from the earth. At a highof sood test above New York it is estimated at 21 deg. in

There was a hall storm in France on the 1-th of July, 1822, which covered the ground at the foot of a mountain three inches cosp with stones, some of which seathed eight ounces, while at a right of a so lect up the assumation to hail tent. It is though, the setue, that is had of duly the 182, was not forced at an elevation of more than assumed. The atmosphere derives is lead monly from the earth by radiation upward. Clouds intercept that rising heat, and it therefore becomes unmaturally cold a sove. The wind in this case came from a higher factode, as it blew from the north west, it therefore arought with it a lower temperature. Another source of cold is found in evaporation from the surface of the hast one. If we moust the built of a hermometer its tumperature sinks from evaporation. As the hall should be in the promotion is colded by evaporation to so low a temperature that the surrounding moisture is condensed upon it, and this concentric hyers are formed.

Here to Housdones remain its would in the air long months to the dustones remain in would in the air long cooks are formed with great rapidity. The vapor is condensed suidenly and also stransanily. It mink that very large hairstones may be formed in five undutes. In a vacuum a stone would hat from the height of 2 out feet in less than then by seconds—but crops of water and hair stones fall with only a moderate velocity, from my own observation, I should think forty first per second in the July storm, at this rate a stone would be two manues in falling about feet, and it we suppose it to start from remain its rate to increase informaty to the altimate velocity of your feet, the time of fall would be in four minutes. The muer. There was a hall storm in France on the righ of July.

with an equal quantity of material arranged in the form of diagonal roos! It is evident that the consideration of this great question will afford the means of comparing the relative efficiency of the distribution of the material in tubular three efficiency of the distribution of the material in tubular bridges as compared with diagonal panel roos.

Here follows a mathematical demonstration, which would of forty feet, the time of full would be in four minutes. The

strong upward movement which is known to exist in the neighborhood where hall is formed, is quite sufficient to sustain hallstones of the largest kind, so long as they can be a sustained in the influence of the vortex. I see our reconstruction, therefore, why hallstones cannot be sustained in the air five or ten minutes, or even longer.

Why did the Hari as the present case attima so large a size?—Recause the circumstances were non-unity favorable to its formation. The atmosphere contained about as nuch vaper as it is even known to hold in this latticle. This vaper was anddenly lifted to a region of great cold, and randing contained about as nuch vaper as it is even known to hold in this latticle. This vaper was suddenly lifted to a region of great cold, and randing continuents of the strong movernment helped to sustain the crystale as they increased until the upward force was no longer equal to gravity, or until they excaped from the influence of the versus most of the stones would fall in five minutes and he of middraward obtain enormous dimensions.

size, others might be sustained ten or fifteen minutes and obtain enormous dimensions.

Here din the Houl is this storm compare with the most researche cases on record?—There are well authenticated cases of heil stores having fallen in England and Frances wighting half a pound, and even more, but I do not know of any satisfactory account of half-stones weighing as much as one pound. A mass of one of the specific gravity of 0.00, weighing, must contain nearly fitteen outs inches, or would make a cube whose edge is 2.5 inches. I have selected a picce of the which was estimated to be about the size of the largest stone which I saw fall on the first of July, and it and it to weigh eight unces. But these largestones of July I, appeared to me unusually white and may, therefore, be conjectured to have had a spongy nucleus, which would have reduced the weight to perhaps stronness. The hall, therefore, in the present storm, was smaller than has been observed to fall in France, hat I question whether any larger hall has ever been seen in this country. any larger hall has ever been seen in this country.

THE MOON'S INFLUENCE.

Does the Moon exert a Searble Indusers upon the Clouds.

By Prof. E. Loomes.

Sir John Herschell, in his "Outlines of Astronomy."
page 161, has the following remarkable language. The
heat of the Nicon is much more readily absorbed in the
versing transparent medis, than direct solar heat, and is
"extinguished in the upper regions of our atmosphere,
prever reaching the surface of the earth at all Some pro-

versity transparent ineds, than direct solar heat, and is exitinguished in the upper regions of our atmosphere, never reaching the surface of the earth at all Some proper reaching the surface of the earth at all Some proper halding is given to this by the trades of the temperature of children and the feel Moon, a meteorological fort for estach we blink it fully entitled to rank, for which it is necessary to seek a cause, and for which no other rational explanation seems to offer. In a note on the same page informs us that this fact rests upon this own observations, made quite independently of any knowledge of such a tendency having been observed by others. Hambeldt, however, in the personal negative, speaks of it as well known to the pilots and seamen of Spannsh America.

Having made a pretty extensive comparison of observations exverial years since for the purpose of determining the influence of the moon's phases upon the fail of rain. I was led to cistrust the preceding conclusion of Sr. John Herchel, and have as corongly sought for observations where we find the amount of ciondiness of the sky recepted every two hours, night and day, for a period of some years. I arranged all the observations in a tabular form thowing in one column the average amount of cloudiness on the day of each full moon for the whole period, the second column shows the amount of cloudiness on the cay after full moon the successing columns show the degree of cloudiness on the second day after full moon, the third fourth etc days up to the last quarter; and other third fourth etc days up to the last quarter; and other third fourth etc days up to the last quarter; and other third fourth etc days up to the last quarter; and other third fourth etc days up to the last quarter; and other third fourth etc days up to the last quarter; and other third fourth etc days up to the last quarter; and other third fourth etc days up to the last quarter; and other there is a transped for new moon, and also for the precious

6.9 First quarter

First day before ... At First day seems. These numbers indicate burshight deviation from a 7 which is the average cloudiness of the whole period, (10 representing a sky perfectly of-treast.) In other words, exactly two thirds of the sky at Greensich is upon an average, covered with clouds. For greatest departure from the mean occurs on the a-coad day after in 1, when the average is 6. 1. This might be suspected to indicate a law and of the mean occurs of the average is 6. 1.

Herschel

It is der, however, not to leave any room for eavil, on the point. I have compared the observations made at midnight, on the days new moon, first quarter for moon, and last quarter for the entire period of seven years.

According to these observations, the average cloudiness at minolyhi on the day of new moon is 6-7 at the dirst quarter, 6.7. It is first three numbers may be pronounced identical with the average cloudiness of the entire period, as already explained. The last might be suspected as indicating a selectal law but it we compare the months for each year expansity, we shad find that they range from 50 to 50, showing that causes which are independent of the moon a age exert a powerful indicates upon the degree of cloudiness. Moreover, we see that in 1-41 and 1-50 the sky was remarkably clear at the last quarter, while the average of the remaining year is 6.5 sinest identical with the results at the other periods of the moon.

This comparison therefore leads us to the same result as the other, viz: that the Greenwich observations, which turnish the degree of condiness of the sky everytee hours, tight and day, for some years, give no connetenance to the foot claimed by Sir Join Herschel, and we have another example of the danger of drawing general conclusions from the reverse the by reference to recorded tables.

Motorology—Monosous and Northers. By Louis Blodder,

observations lossely tressured up in memory, without testing them by reference to recorded tables.

Meteorology—Memoris and Northers. By Lorin Blodget, of Washington, on the "Southeast Monseon, and Norther of Lorin, and the Abus man Admission, and Norther of Lorin, and the Abus man Admission, and Norther of Lorin, and the Abus man Admission movement of the North and interesting series of observations relatives to the Metere ological Phemomena of that portion of the North American Continent lying west of the Mississippi River—a region which until recently has been almost unknown in regard to its conditions of climate. Mr. Blodget referred to the peculiar atmospheric movements that are shown to exist there, through the observations of army officers attached to the military posts, by the sid of officers in charge of special surveys, and by industrial observations of two or three years had thus become surficient to throw great light on the more striking phenomena of these Pacific and interior climates. The author proposed to refer to the peculiar atmospheric movements that are shown to stait.

The whole Atlantic and Southern or Gulf Coast presents us with more or less marked alternations of land and sea breeze, with all the more common phenomena of which and their solution, we are quite familiar. But toward the western extremity of the Gulf Coast in Texas, this becomes magnified quite beyond the ordinary phenomena of land and sea breeze, with all the properties of the Gulf Coast in Texas, this becomes magnified quite beyond the ordinary phenomena of land and sea breeze, and develops a true

Texas, this becomes magnified quite beyond the ordinary phenomena of land and sea breeze, and develops a true Texas, this becomes magnified quite beyond the ordinary phenomena of land and sea here as and develops a true norson, or continuous wind day and night for months together. At the mouth of the Rio Grande, and het seen this point and Compet United the maximum effect is procured and the fully developed monsoon reaches to the Interior Desert Plant called the "Plant Electrode, or Staked Plant and blows over the whole district bounded by the his Grande and the San Pecro and Pecos on the soutwest and network grantially in the low plant of Perus on the seat west and network grantially in the low plant of Perus on the seat west and network grantially in the low plant of Perus on the seat from his yet of Maximo, the trade wind of the Parish is outened and this for some distance at sea. For some portion of the summer months, it fully revives the tradewind, and hows a Southwest which in the direct path of the Northeas trades. Limit Maximy fully substantiates this reversal of the trade wind, as at certain times of yequal to the broke wind freed in velocity, tough, the observation of the Maxim means at Maxation, and San Bi lass been quite are guar and of small amount, such only as the transfer of passage of vessels could make.

(In the California of ast, a continuous wind is experienced to the day of a stake of a structure of the months of the california of ast transfer at a terminal. The

as the transfer of possage of vessers could make.

(by the California coast, a continuous wind is experienced of so marked a charmer as to attract great attention. The posthwest, or neath no thwest wind here unfailingly occurs a very summer day, and on the immediate coast scarcely case at all through the summer, to amount to a land ward aspiration. As this blows however, without being wided by the circulation of surface atmosphere usually received on the neutral one. It has not the absolutely continuous character it would have if it accorded or nearly accorded with that circulation. The Mouston of Texas dies so nearly accord with this circulation, expressed there by the northernst trade as it eiters the Gulf, die-coad by local circumstances to an etaggerated sea breate on all the Gulf metances to an exaggerated sea breeze on all the Gu

and one hundred miles from the coast. The resultants are from the land, and at northerly points in winter, but the prependerance is so great from the sea that the annual resultant is from S 30 deg E with a mean constant force of 134 in the estimated notation of force. The author next referred to some analogues of these continental annualizes of atmospheric movements with those of the Eastern Continent; alinding to the observations of Prof. Dova, of Berlin, as given in The Edinburgh New Philosophical Journal, regarding the lindian monasons, the sast winds of the Eastern Conservation of the state of the sast of the sast, and the north winnes from the Polar S-a. He shows by comparison of bar metic means for the different portions of the year, the inducing cause of this general confinential reardaction in summer. Atmospheric circulation lies really at the base of all the atmospheric conditions we may observe in any single portion of the earth. Dove alludes to the essential change in his views of the relation of these conditions in Europe, which have been enforced by comparison of observations in other parts of the world, and especially in Asia. Our own conditions both constant and cisturbed, or dynamic, are presumently referable to rim te and general causes and to systems of atmospheric moven ents.

The "Norther" of Texas and the Gulf coast, as not

and cistureed, or obtained, and the systems of atmospheric moven ents.

The "Norther" of Texas and the Gulf coast, as not coming in the same class of winds of continental appration, has not been referred to in the foregoing. The statistics of this phenomenon are, it should be confessed, scarcely sufficient to solve the questions connected with iter even to show fairly in any exhibit of it. But some interesting facts have been collected and some analogies seem so clear that it may be proper to present them. Observation of the Northers on both horders of their extension north and south has been very well made—their limit west is even clearer, so far as identity with the Gulf is concerned. The san Pedro River of Western Texas, and the nountains bordering the Pecce, is the line of distinct boundary, not only of this phenomenon, but of the general climatic conditions of that part of Texas. The irregular and violent winds of New Mexico are not analogous to the "Norther," the wish after from the North. Their characteristics are these of the most decided irregularity, and the most forcupily local, on the nertit, Fort Atkinson at the crossing of the Arkarsas, is also beyond them, and indeed they see in limited nearly to the district of the south east monsoon though reaching, in a modified character, farther cast and farther west. At the south, their limit is wishes the waters of the Gulf—prevailing, as I have been assured, constitutes within sight of the northward, while the exwaters of the Gulf-prevailing, as I have been assured, sometimes within sight of the northward, while the ex-pring trade wind from the east continued its maderate but

ristant course.

The following summary presents the positions that seems to be established by the data which have been obtained in reterence to these two striking phenomena of the Guif and

he Texas Plaits.

The Southern Monsoon is claimed to be a true Desert Monsoon, and analogous to the Monsoon and Desert winds of Atrica and Asia.

The Northers are considered as peculiar to the physical atrustine of the continent and its relative position to the Guit of Maxico, but not as having any necessary relation to the south east winds, or to other districts than those in which they are felt.

The source class enection of both these phenomena from the challess countries on the Plains and Managaira, North

which they are felt.

The entire case mection of both these phenomens from the changes occurring on the Plans and Mountains Northward, and from the climate of the continent class where, generally is particularly insisted upon. A peculiarly local and imited character is traced to the position of the Dastricts in which they occur between the lines of marked effect is the system of general atmospheric or ulation, and in latitudes which at sea would be a belt of caim.

As a true Desart Wind of aspiration, the southern wind of lease is a non-precipitating wind, increasing to temperature and rare faction, and exhausting itself in a rainless distres, beyond which it does not extend.

The Norther's regarded as a reverse wind of aspiration, the positive laws of which cannot at present be in located, but some negative positions are taken, as todiows. It is not a wind of propulsion from the Rosen to the inclusion of the almosphere within the lamb of a chain formation, it is not a precipitating and from its own volume, but when attended by somes of any smooth, has nearly a reverse current above it from which the principal precipitation takes place, it is critically analogous to the north exact and southers within any stock the principal precipitation takes place, it is critically analogous to the north exact and southers which and are always secondary and, in the nature of collection, and are always secondary and, in the nature of the inmation of the placenomenon taking piece at the observed point.

The assumed cause of the phenomenon of the Norther, The assumes cause of the phenomena of the Norther,

the most entractionary because so excessively votent in their movements, is the sunden as entrol received and satu-rated volumes of air in the western part of the Galf and on the coasts, counting trisquisity from its peculiar conform atom of the sola and comment there, and their position re-lative to the Trace winds.

ato not the sen and contains there, and their position re-lative in the Trace winds.

These investigations have been mainly reported under the sanction of the Smith-onian Institution, aided by the periodic floits of Mr. Biodger. Libert Couch, of the U.S. Army, has recently undertaken explorations in the Wes-in the procedure of these impairies, and in the course of the journeyings are identifying ited up on an extended se-tive of elicery stars made by a French physician. Dr. Bur-hardin, in the distriction of Northern Mexico about San Leuis Force and the interior towns, but mainly in Matamores 10. Berlandin substrainteds were furnished him by a Socie-ty of Physicians at Genevy, and he resorted his observa-tions there, alterward continuing a long series for his pri-vate purposes. On his death, a year or two since, they fell not the hances of blent Couch and are preserved in the Smithsonian Institution in manuscript.

The Zodianal Light, the Ferminial appearance of Meteors

The Zedward Light, the Fernancial appearance of Milears, and the parties of the Ford to space to which the motion of the color system to devoted, by: By Daxiet Vaccilies, of Communical During the best year I endeavored to trace the origin of the Zeomana Light to the effect which a visiting medium to the creating space communed with the motion of translation of the sun should produce on the orbit of those small nodes which visit our globe as shooting stars.

The extra trrestrial origin of these bodies as well as the movement of our system through space, is generally admitted, and even the existence of a rare medium in a proceedings to flumbolds, powed by the exact accordance of numerical relative. On my recent investigations on this subject. I have taken into consideration the effects of planetary at traction on such bodies as are small, or light enough to be outerline by the medium, and this cause, which I at diest neglected, monthes the theory considerably, and enables it to meet several facts for which it could previously give negligible and the several facts for which it could previously give negligible.

Were the sum at rest with respect to the medium, both raving the same motion (a supposition which none will admit the orbit of his attendant should continually diminish without undergoing much attraction to form. But of his moves, rapidly the ogh this rare duid, the small bodies which attend him will rustain a greater diministion of velocity trop, its resistance on one side of the line of his mation than they sustain in describing the opposite position of their crisit, a continual increase of excentricity will be the recessary consequence of this unequal resistance; but the increase will be arrested as the bidge approach near the sun, on account of the greater density of the medium in his vicinity. It is evident, however, that the great variation in density, which we would expect to find in the part of the field which forms an atmosphere for the sun, must, in a great mesure, disappear at considerable distance from him in consequence of his great velocity; and though his attraction prevents the retailive motion of the medium from being rectilinear, the defection is nearly the same on every ride, and it will not therefore prevent the elongation of the medium from being rectilinear, the decition is nearly the same on every ride, and it will not therefore prevent the elongation of the medium from being rectilinear, the decition is observed the sum of the medium from being the structed between the sun and the point to which he is moving. This opinion I have condrined by matherical investigation which show, that the motion of their transverse axes principally depend on the of the first verse axes principally depend on the of their transverse axes principally depend on the office the angular discords between the sun and the point of their motion, whenever the last line has a small inclination to their planes. Indeed, their planes, however they might be situated, when defended their planes, however they might be situated, when degree are at their planes, however they might be situated, should greatly approach this line

with this process and other arbits from the line of solar motion, whenever the last line has a small inclination to their planes. Indeed, their planes, however they might be situated, should gradually approach this line, and finally coincide with it. The movement of the nodes by which this charge is produced, depends on the angle the line forms with each plane. In the case of the light bodies under consideration, the equations will become so great that the planes in which they move must all pass close to the same line, and must all untracet at the parceurs by the three modifies in consequence of the immenses swarms of meteors, which assemble here from all parts of the planetary regions. I ascribe the Z discal light, but this conclusion must be modified in consequence of the effects arising from the attraction of the planets.

In the absence of a resisting medium, the planetary disturbances should be perodiced, but they must produce results of a cifferent character on these bodies which are subjected to the condition of keeping the transverse axes of their orbits in direction of the same motion. The perpendicular force which they intraceved the scholars of all should charge their positions from its influence, until they intraceved the scholars from its influence, and they have all should charge their positions from its influence, until they intraceved the scholars. This would be streetly the case, if the planets were all situated in the continuar to that which the sun describes. This would be streetly the case, if the planets were all situated in the continuary to the actual result is not materially different, and there must be an extensive zone of these bodies intersecting the script. In the passage of the earth through this route we must ascribe the amount of the sub-doles intersecting the script. To the passage of the earth through this route we must ascribe the amount of the bodies is the ret than when it is tronged, and accordingly most of the meleots composition of the planet in the order of the eight. The for Bore elective when the motion of these bedness is the rect than when it is retrograde, and scoordingly most or the meteors on passing the none most move in the order of the legis. If the cause we may trave the absence of numerous meteors during the earth a commission with rise route in February for supposing their motion direct, it will be found that they must sight on the earth, at a considerable during south of the Europes.

be found that they must argue of mecanic, as a considerable distance south of the Equator.

Supposing the usedium aiready noticed to be at rest, we may obtain the longitude to which our system is advancing to yading so one to the longitude on the 5th or 10th of Angust. To ascertain the latitude with any degree of pre-Angust. To as erish the lattice who any degree of part of the heavens the meteors proceeded, at places where most of them appeared in the zenith : for in this case their direc-tion could not be changed much by the earth's attraction. The Zediscai Light much, then love, be ascribed to the accumulation of immense swarms of light bodies or me-

fransverse axis are visible by turns; one producing a Zodiacal Light in the mornings of antumn, the other evenings of February and March. The top of the consight represents the cuilide part of the aone most disfrem the sun, and it will not, therefore, deviane much fine ecliptic. The base of the cone is composed of swarms of meteors in the vicinity of their perchalical light from the northern side being reflected by those helps which have the greatest perchellon distance, which light from the opposite side comes from those which approach nearest to the sun.

In consequence of the high northern latitude of the position of the beavess to which our system is moving, the precisely of the Zodiacai Light, especially its lower part, may be dy of the Zodiacai Light, especially its lower part, may be a sun to the consequence of the high northern latitude of the position of the Zodiacai Light and this fact, which has been a cently made known from a series of extensive and careful observation, is at variance with the received uponion a specing the revolution of the Zodiacai Light around the sun.

The extraordinary falls of meteors on November and

The extraordinary falls of meteors on November in and lith, (when the earth is in o signetton with the habout which the great assemblage of meteors must obtain to pass their common aphelium) seem to aree from the presence of another zone of these bodies interacting he

for mer one at right angles.

As the plane of this zone of meteors almost coincides with the sun's axis, the arrangement seems to be due to a creased tendency of the light bodies to his polar regions, arising sither from the influx of the medium to his polar, in consequence of his rotation as produced by the method which he imparts to the find, which he sweeps through the light bodies.

with incredible velocity.

Reconnecssance of the Arguness River. By Dactor Ja. A Warden, of Cincinnari Ohio.

This paper presented a birds-eye view of the different characteristics. Geological and Botameal, that show the selves to the traveler, who comme acting at the month of the Arkaneas River, follows it up a distance was divide for the same of convenience into here sections, characteristics by the geological formations through which is pass to wit. Alluvial, Pertury, Frantive and Matamorphic Coal Fermations, and Carboniferous Lamestons.

Alluvial, Pertury, Frantive and Matamorphic Coal Fermations, and Carboniferous Lamestons.

Alluvial, Pertury, Frantive and Matamorphic for under the sevicence of an immense alluvial does it fund not only in the Mississippi, but in banks and pass which surround the month of the river, and extend it miles inland in one immense alluvial dop sit, and alloquently does the river core flow its banks and the surround country, that crykes are rentered aboundary to send us the formation of the formation of the covered from one include, for such is the immense and month and mad held in suspension, that the squarity of sand and mad held in suspension that the squarity of sand and mad held in suspension that the squarity of sand and mad held in suspension that the squared country is a contraction, where the aspect changes, and the transfer wood.

After according some 200 miles, we come to the Fernances for the sand of places as a holidy, interspersed and Matamorphic—Here the traveler page.

mests forests of pines, cak and body, interspersed in neterwood.

Evapores and Metamorphic—Here the traveler position to the startooms stream finds at a place which from its charteristic, he may call Terra Furna, and here are innessforests of Oaks, and the city of Little it as appearing a startoom at this point forms an interesting at the forests being a slate citif of some 10 or so feet in hight, incline West of North the axis of elevation being a black some west and also for rooms distance on the east.

Metamorphic—The tocks of this region consist of an are sandstone or quartranse rock, which have been intrade and changed by the proximity to the eraptive graite. The beauty of the sensery in this region is appeared by the mistree observing the successive parallel ranges of his with the interventing excavations covered with a sea forests.

Formetion. - The coal found in this part of thecen

ty is not so give the their found else there.

It was the intention of Dr. W. to have presented a callegue of the plants found in this region, but the requisit and not having been reinfered by those possessed of the recessary information, he was able to furnish but a limits to the contraction of t Investigations in Analytical Mochpology, and Unitable Su-faces of Equilibrium. By Prof. B. Perror, of Co.

bridge.

The general criterion for distinguishing stable from a stable equilibrium is faily given by La Grange, but he prestions to forms of solute and fluids is almost omerican science, and requires peculiar considerations for sea special case. It is also to be observed that the distance of the consideration of the considerations for the special case. in science, and requires peculiar considerations for an special case. It is also to be observed that the difficult the sphect is increased by the fact that forms are sometimes stable to regard to some elements and unstable regard to others, and that pertions of a form may be be, while other portions of the same form are unstable either of which cases the whole form must be regarded as The planetary forms of equilibrium

The planetary forms of equilibrium occur under the combined abrion of gravitation and rotation. The latholity of these forms, principally shown in the throwing of things, comes from the safe should be the did particular about the velocities a shock they are composed, and by which the velocities the different parts are brought to one velocity. Here arises the frequent subdivision of Saturn's rings, and is setting off the rings upon the nebular hypotheses. Both their of these phenomena is probably to be modified the action of defended processes.

The capillary forms of equilibrium are some of them is stable, thus, the crup of water which adheres to the undersorted of a horizontal plate is in stable equilibrium. But if, by any cause, its base of solvestion is sufficiently done let of it may be made too small to held the drop which will then draw itself in at the top to a spheroid son and fall off.

at there is an intermediate point, from one side a

Mut there is an infermediate point from one side of which the tendency is toward the stable form, and on the other side toward the decoping of , and this p riton is a form of unstable equilibrium. The clustes saw present nany interesting cases of unstable equilibrium. But as a product cample, the surface of revolution of least sates disserves a tention, and the Mathematical investigates of it, with diagrams and Algebraical rorunties, concludes the paper. On the rising of Waters in Springs in

On the riving of Waters in Springs immediately lefer.

Even By John Brooming of Professor Mathematic
and Natural Philosophy, Trunty College, Hartford.

This paper states the fact is well authenticated, that is
Ritherd, Vr. and Capeard. Mass, in each suita a small
stream which, during a drought, become drid up and
case to flow; that shortly previous to the appearance of
rain, but before water has failen, these streams spain begs
to flow. So marked has this been the fact, with regard is
the stream in Ku land, as to attract the notice of the labor. the stream in Ku land, as to attract the notice of the man itents, so that for the last forcefy years the approach

In the case of the Concord stream, the fact was established by competent proof that rain must to be looked for immediately upon the responsance of the brook. The cause of the phenometon has been attributed by

It is called a first parameters of these aprings a shell into previous to its descent in the vicinity of the spring itself, why become used must be stronger as an in along the improbable rain would fall at two distant because them, and that this interval should be such as to easily them, and that this interval should be such as to easily that wa'er falling at the first locality should observe that wa'er falling at the first locality should observe that wa'er falling at the first locality should observe that wa'er falling at the first locality should observe that wa'er falling at the first locality should observe that wa'er falling at the first locality should observe that wa'er falling at the first locality should observe that wa'er which exists before a rais.

The atmospheric and hydrostatic pressure combined exactly counterbasineing the upward force of the jet water, will now when the force of the jet is increased the amospheric pressure remaining the same, or what has force as in the decrease in the deneity of the atmosphere occurs she the decrease in the deneity of the atmosphere occurs she

pressure is dimonshed, the elevation being greated she the decrease in the density of the atmosphere occur si-ultaneously with an increase in the strength of the jet. It this phenomenen is general—a tack not yet secretaed— the curious discover; is mide, that their prings and has tains of the earth are natural bacometers.

tains of the earth are natural bacometers.

[By Telegraph]
CLEVELAND, Monday, Asguet I, Ba.

The following Professors were appointed to preparate papers for the next sandual meeting.

Prof. Bache on Tides.

Prof. Henry on Atmospheric Electricity.

Prof. Hall on Palazone Rocks.

Prof. Smith, of La., on Michro Chemistry.

Prof. Gould on the Progress of Organic Chemistry.

Prof. Gould on the Progress of the Electro Chrosope

phic Method of Observation.

Prof. Leidy on North American Extinct Manualia as

Reptills.

eptilia.

Frot. Pierce on the Theory of Planetary Perturbation.

Frot. Burnett on Advances in Anatomy and Physiolog.

Frot. Agassis: on the Alterstion of Genera in Asiana.

Frot. Dana on the Geographical Distribution of the er Animais.

APPRENTICES AND SLAVES.

The following are the entire proceedings of the receiptive apprentice case, which transpired in this diffusion to the rate of the receiptive apprentice case, which transpired in this diffusion that the case of the rate of the claim of Junes M. Boaler, of Survas has state of Delaware, to the custody of William Cumulate, from the case of Junes A. Boaler, of Survas has been apprentice.

training apprentice.

This was a hearing upon habeas corpus.

It appears that Williams Cummines, Jr., had with the his wisk ge, if not with the assent, of his father, where sided in Pennsylvania, been apprenticed to the claimed under the Delaware act of 5th Petruary, 1877, 1878, 1878. saided in Princeylvanus, been apprenticed to the claiman uner the Delaware act of 5th Petroary, 1est, 1sev, 1sev,

Commissioner as accessing bins.
The racts being fully preved, Crabbe, for the claimant it.

ray Rush was with him) argued: That this was a case within the Act of 1858, and the The Zoulean Light must, there is no searched to the accumulation of immense swarms of light bodies or meteors, not only in the sun's path, but also in a zone which the same direction.

The two parts into which this cone is divided by its